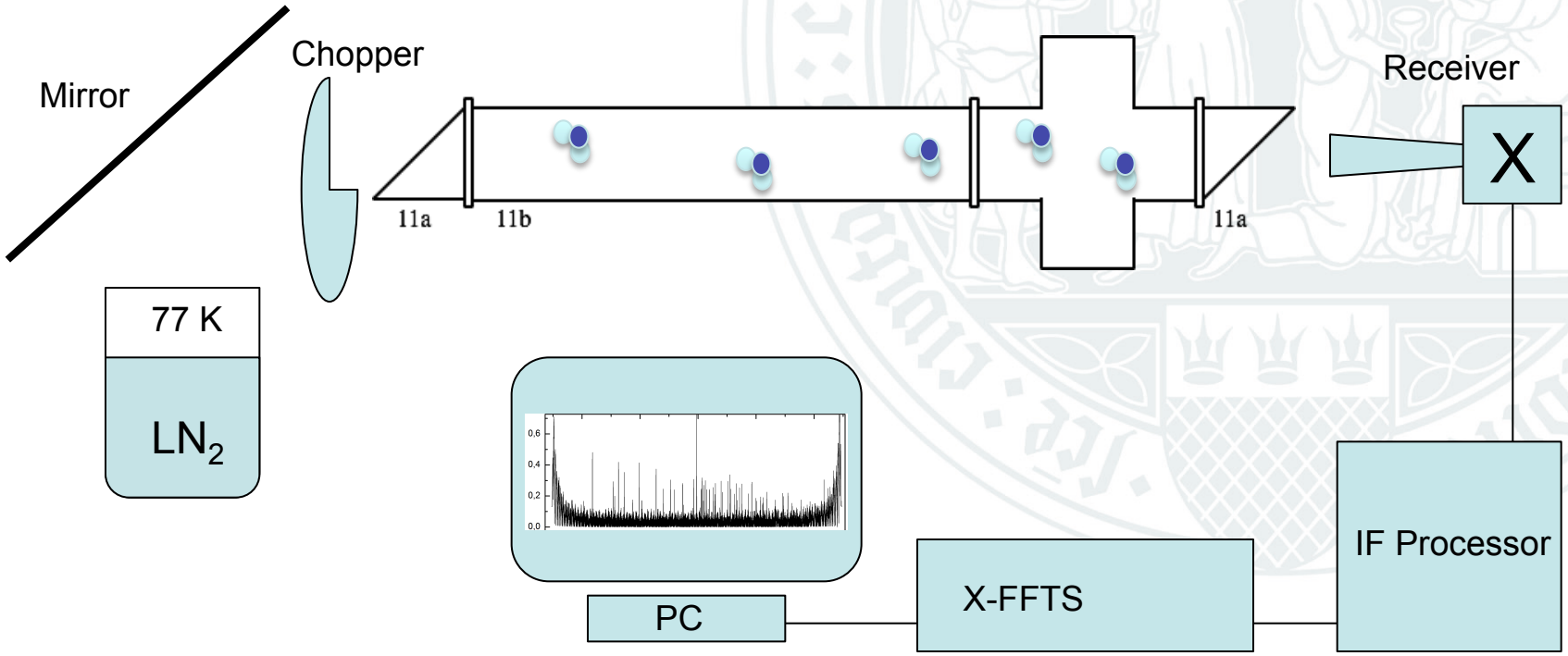
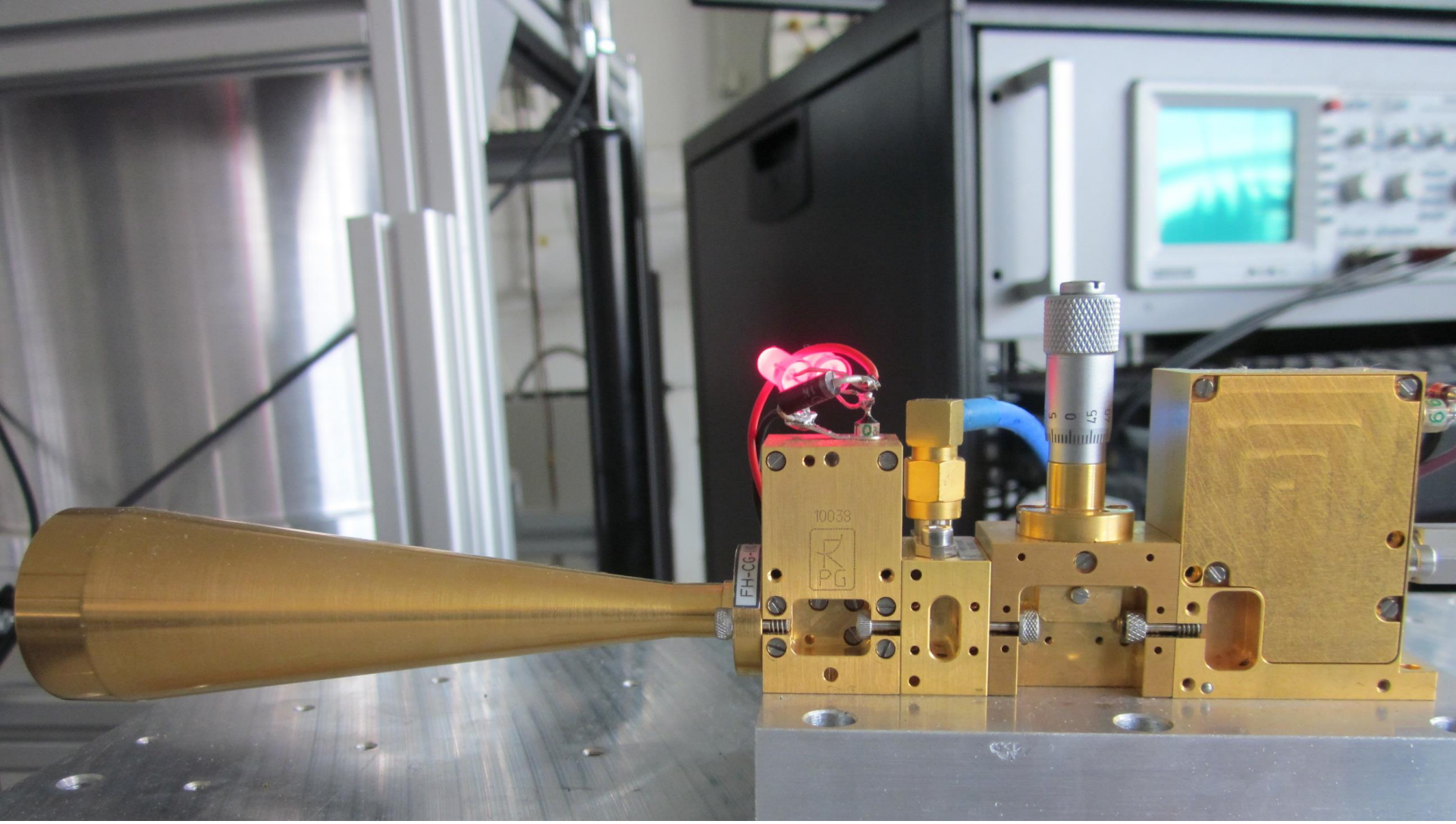
Nadine Wehres[1], Frank Lewen[1], Christian Endres[2], Marius Hermanns[1], Stephan Schlemmer[1]

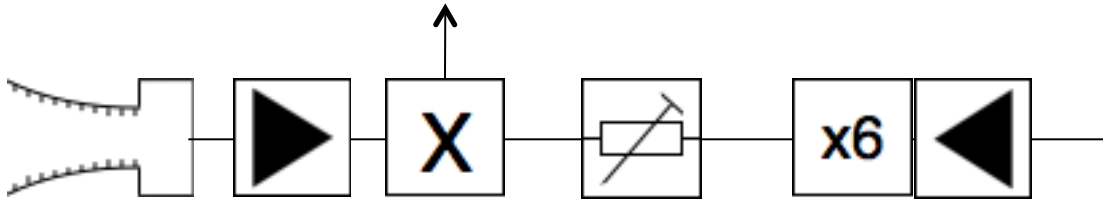
HETERODYNE RECEIVER FOR LABORATORY SPECTROSOCPY OF MOLECULES OF ASTROPHYSICAL IMPORTANCE

[1]1. Physikalisches Institut, University of Cologne [2]Max Planck Institute for Extraterrestrial Physics, Garching

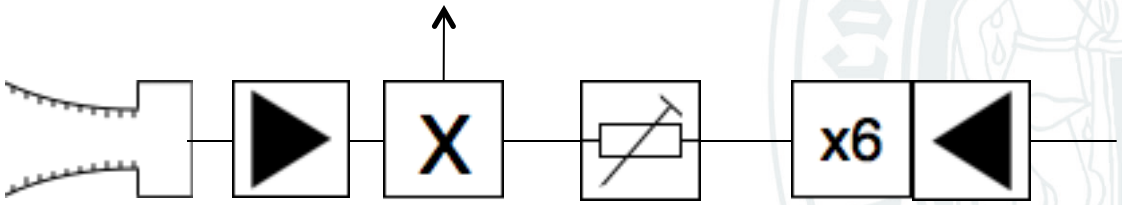
Emission Spectrometer




FH-CG
10038
PG


X
x6

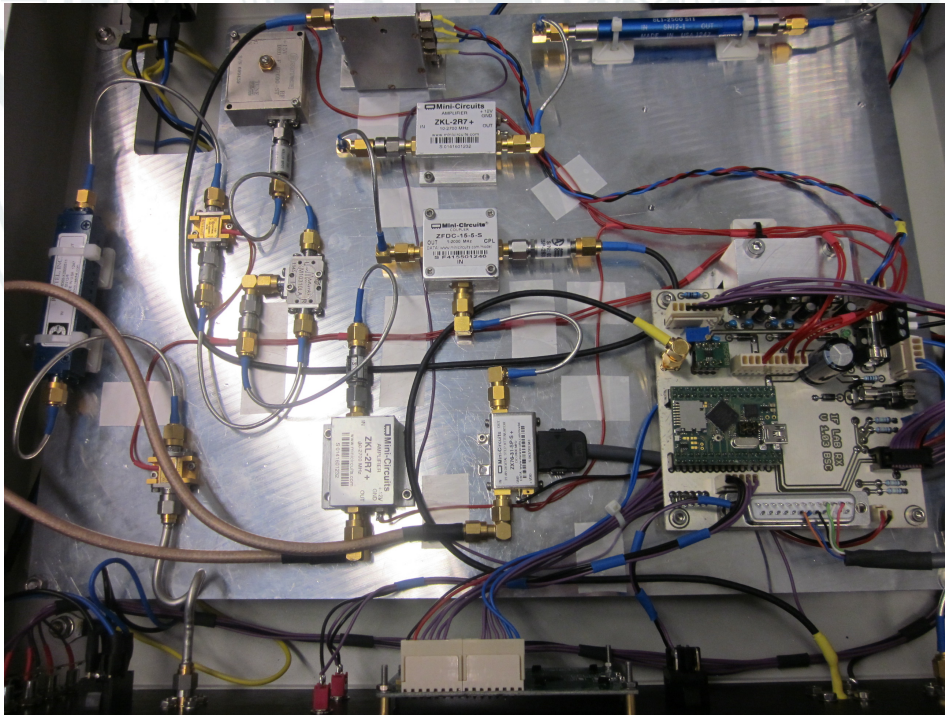
Heterodyne Receiver



- 75-110 GHz Frequency Range / ALMA 3 Band
- Room Temp. Low Noise Amplifier <390K @ 20dB Gain
- Mixer: LO 12.5 – 18.3 GHz @ x6
- IF Out: 6.35 GHz @ 2.5 GHz BW

IF Processor

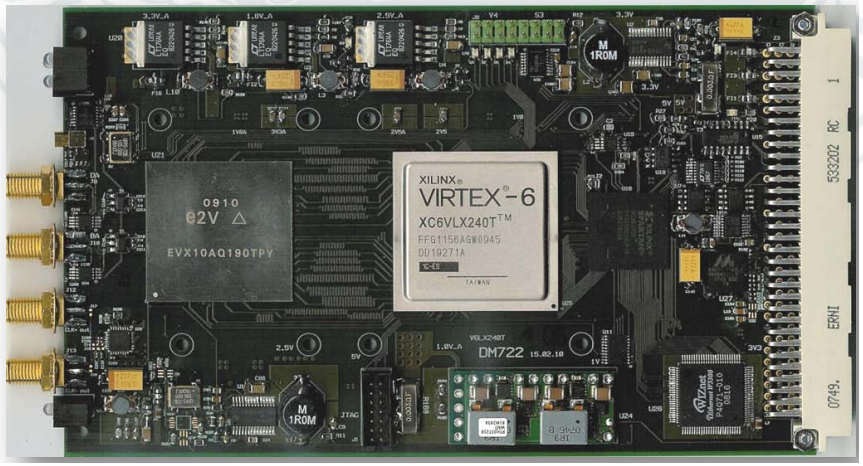
- IN: 6.35 GHz @ 2.5 GHz BW
- Amplification & Filters
- Continuum Detector to set Amplification
- OUT: 0-2.5 GHz



X-FFTS

Max-Planck-Institut
für Radioastronomie

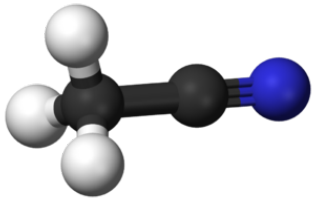
- IN: 0-2.5 GHz I/Q or Single
- 2.5 GHz BW @ 5 GS/s
- 10 bit ADC @ >55 dBc SFDR
- FFT with 32768 Channels @ 76.3 kHz spacing
- runs in APEX since 2009

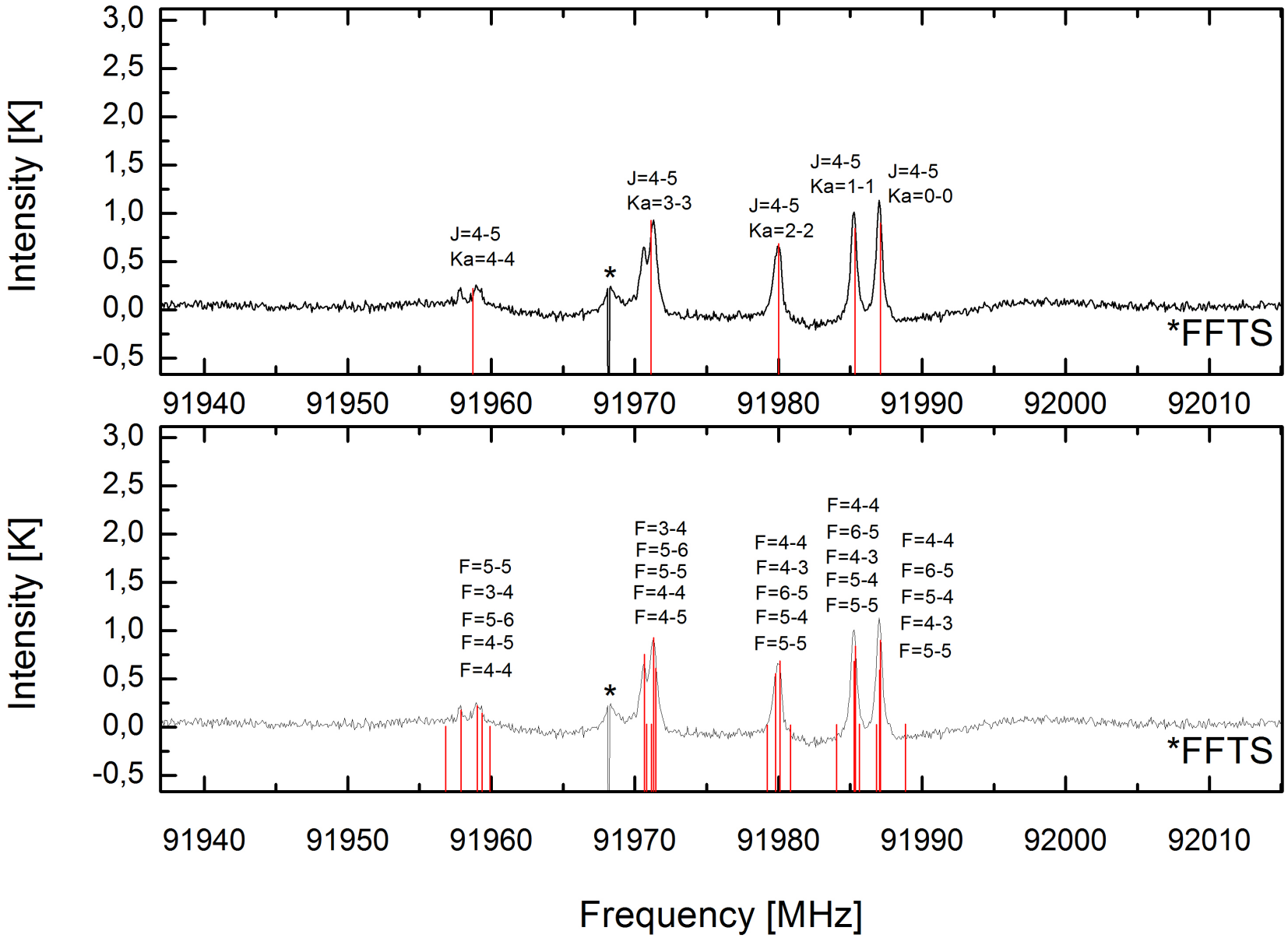


More Information: MPIfR Bonn, Germany

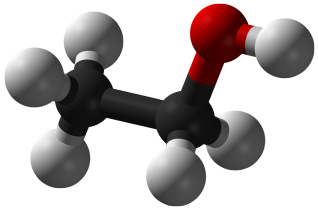
SFB 956
Cologne | Bonn

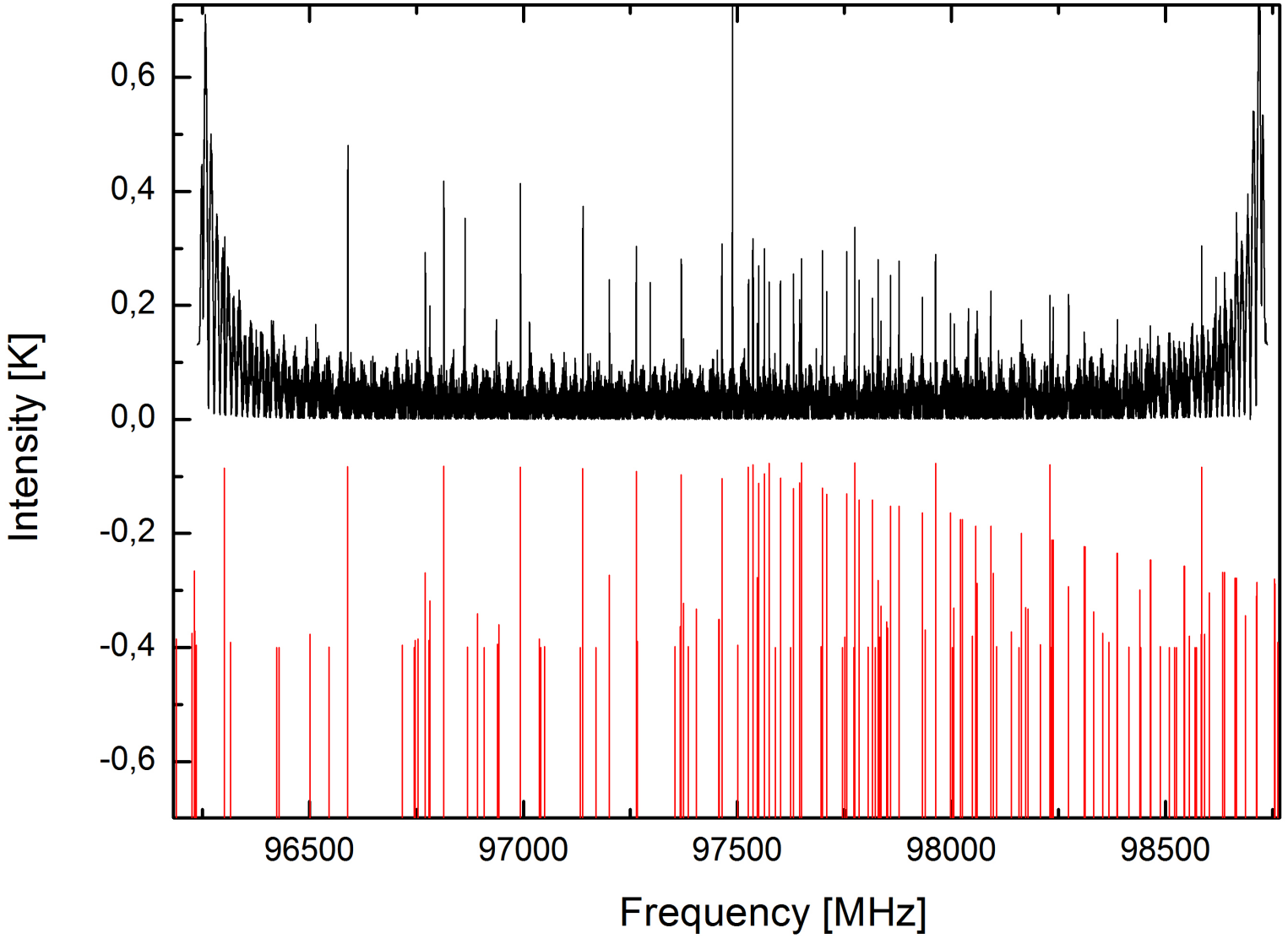
Emission Spectrum of Methyl cyanide



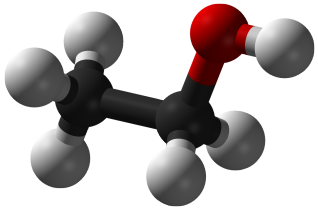


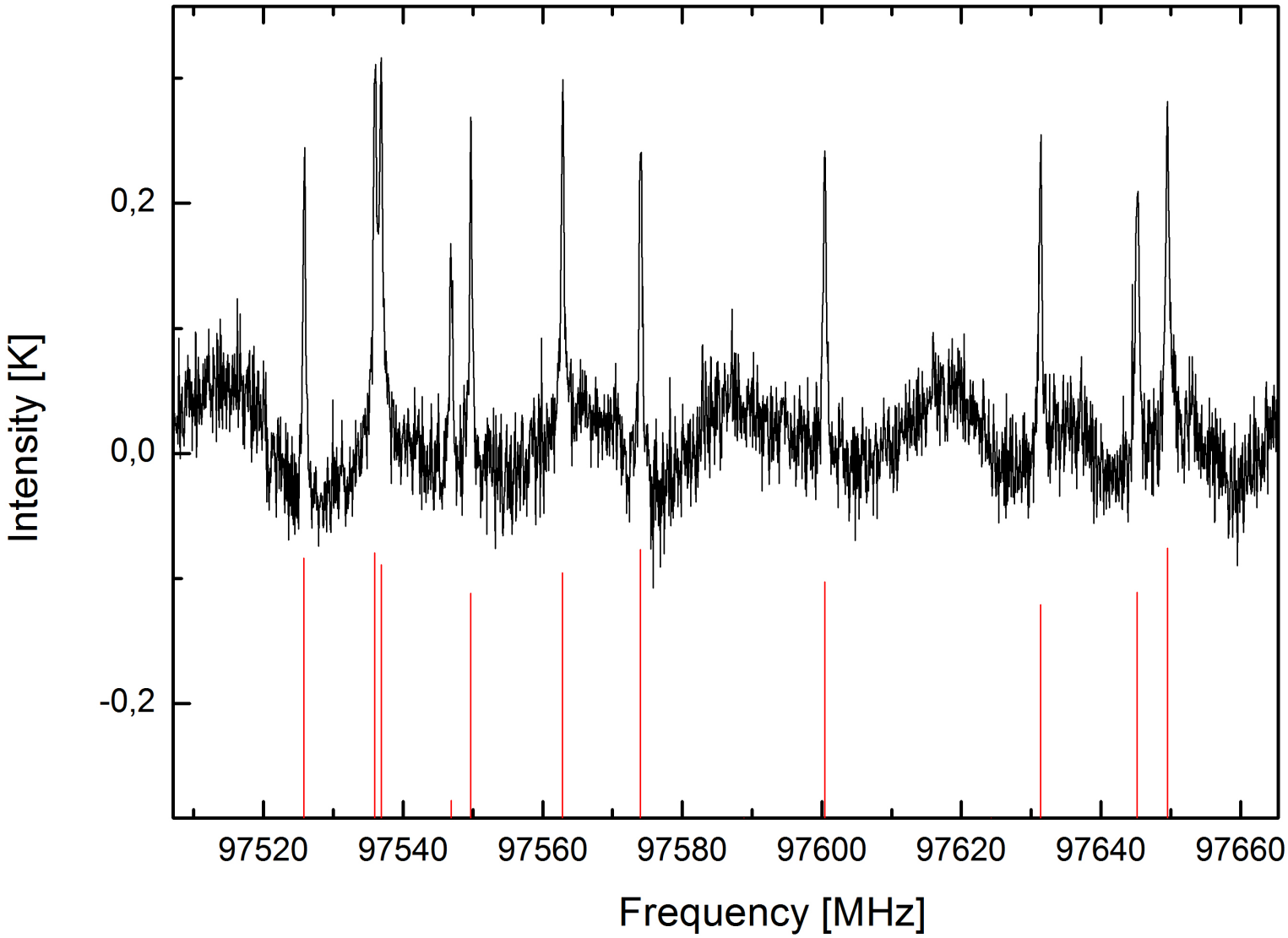
Emission Spectrum of Ethanol



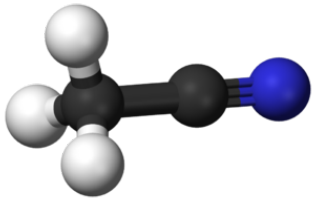


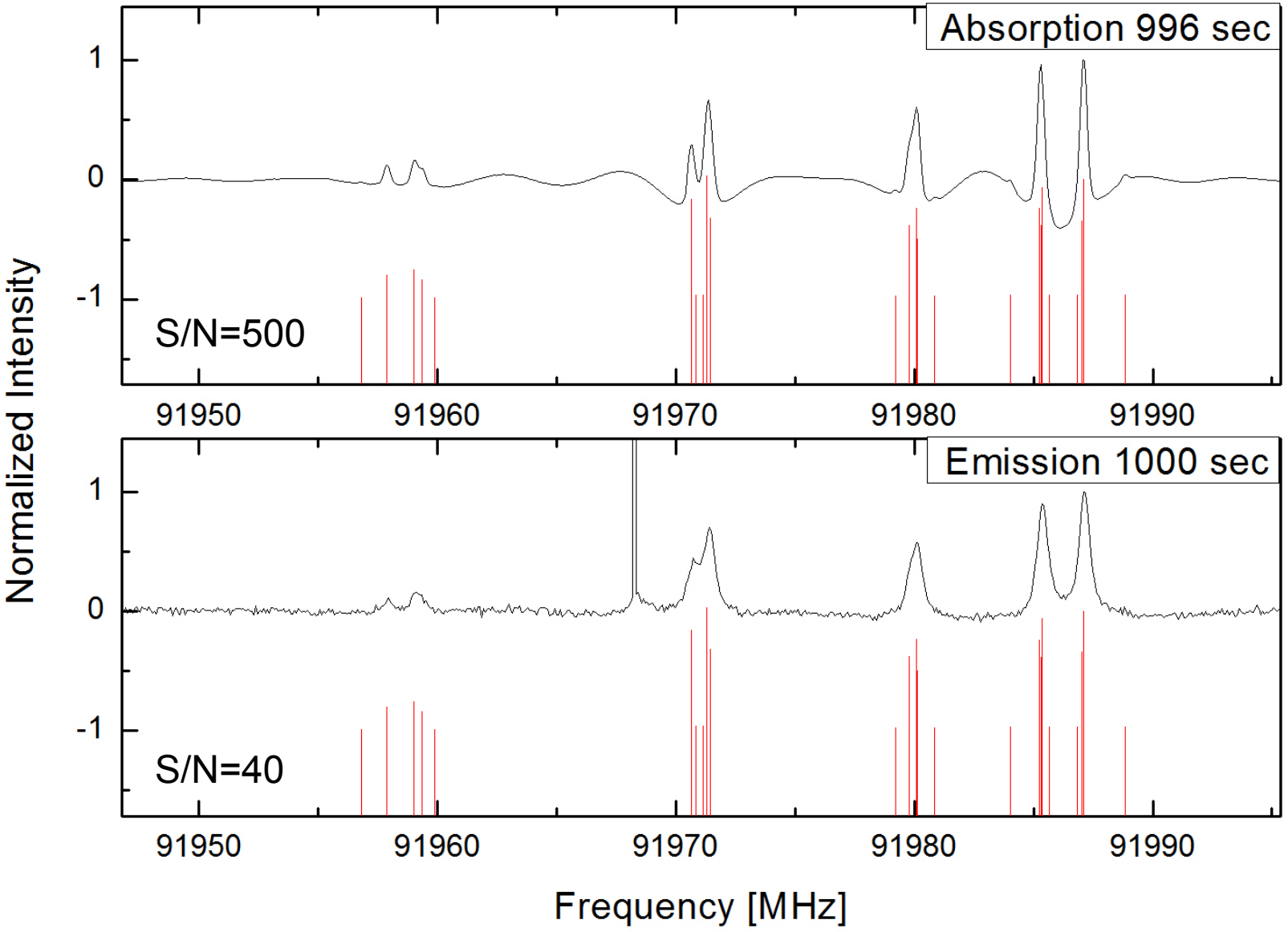
Emission Spectrum of Ethanol





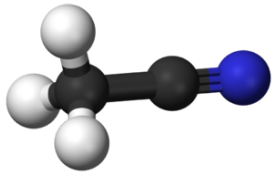
Comparison Emission vs. Absorption

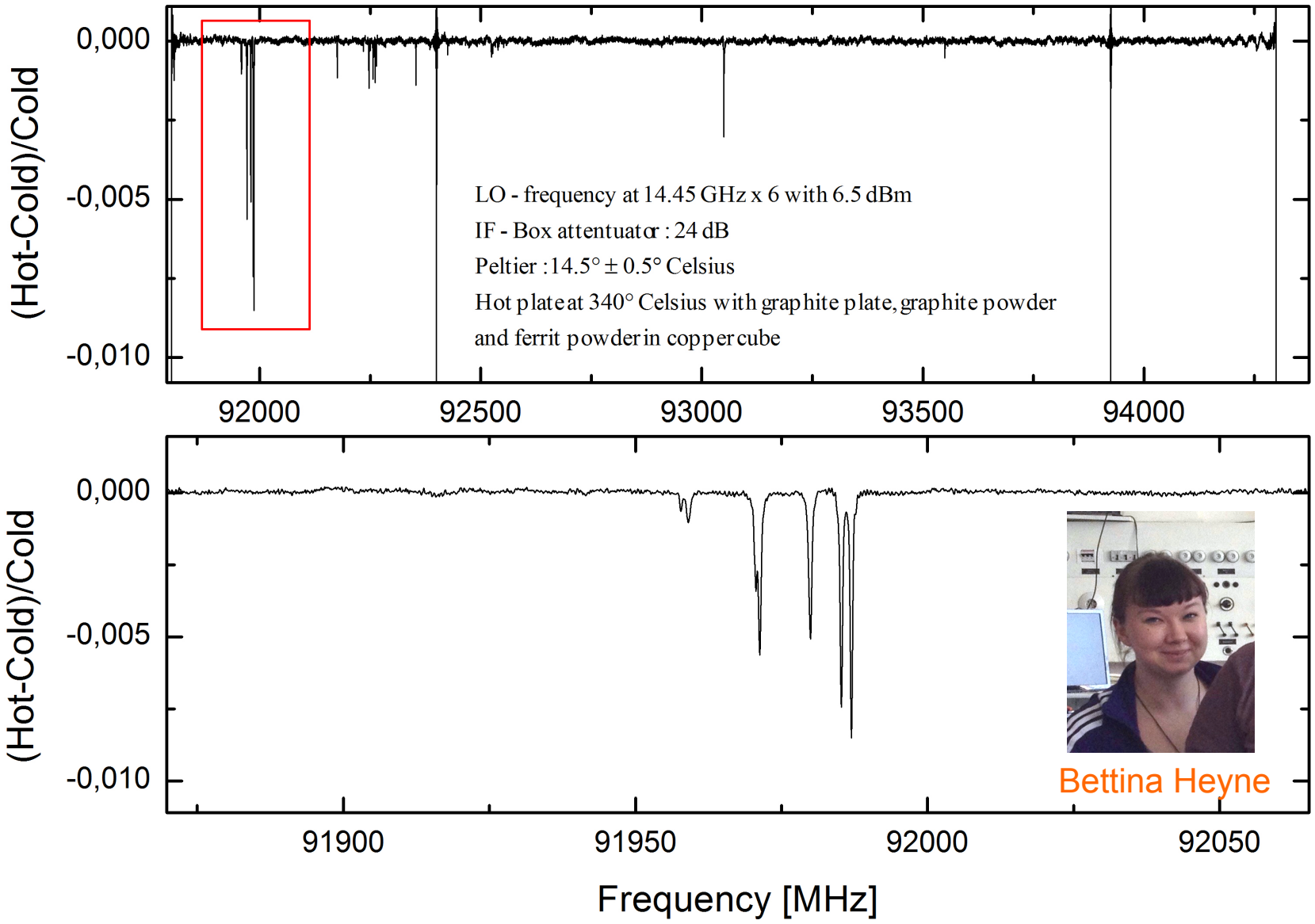




Just In

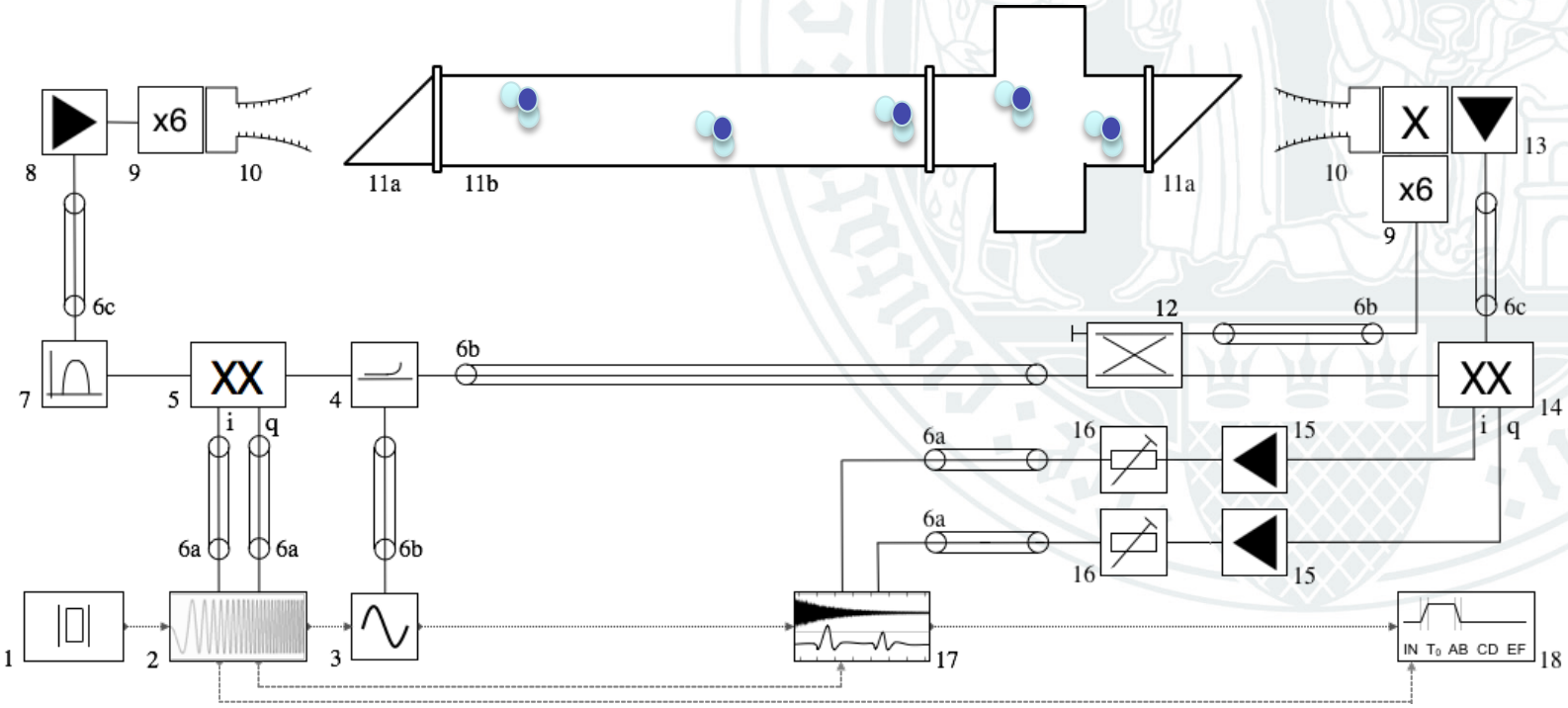
Methyl cyanide with copper cube absorption in 160 minutes



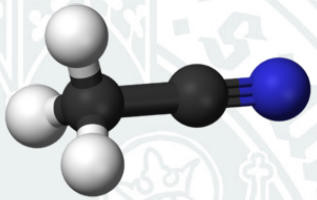


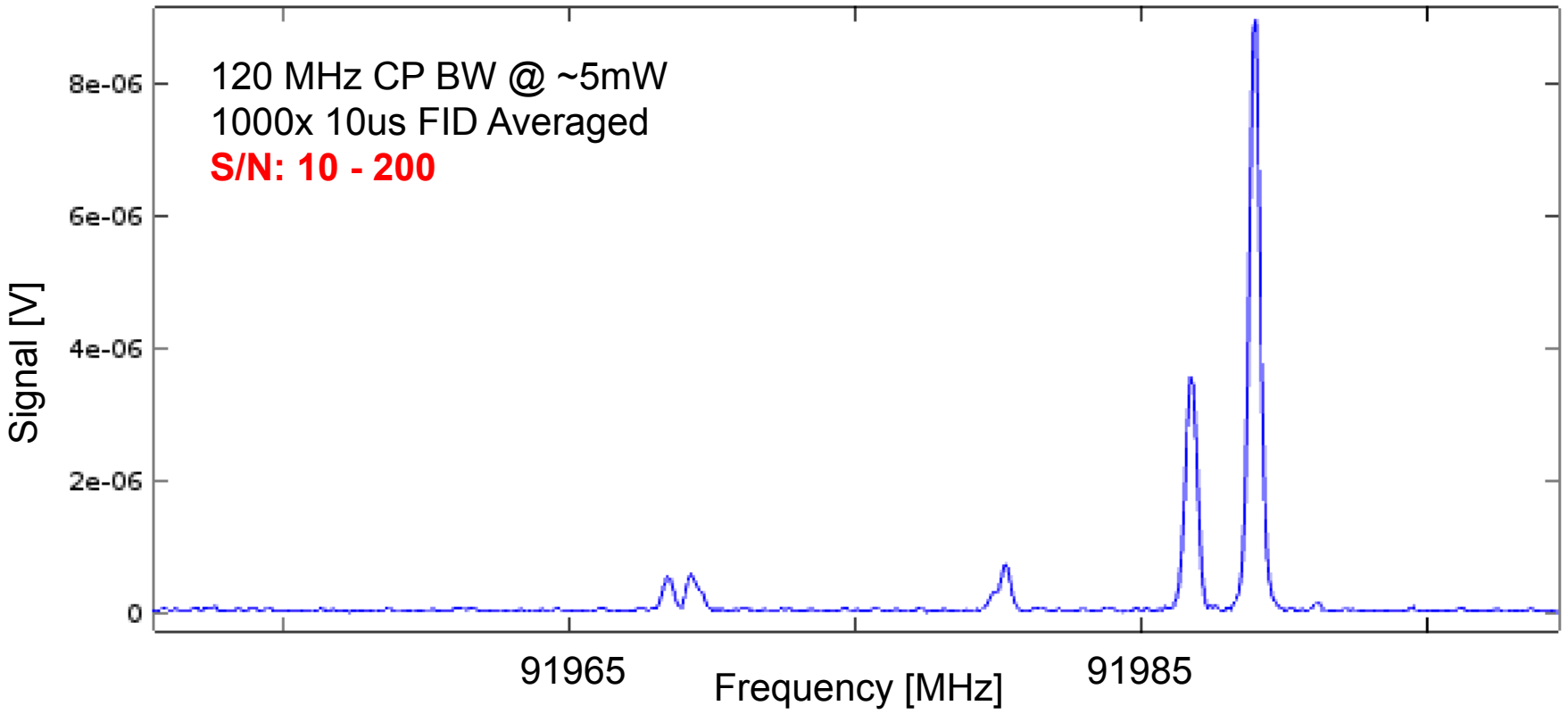
Bettina Heyne

Chirped Pulse Setup

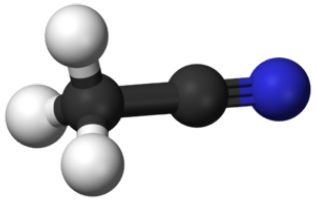


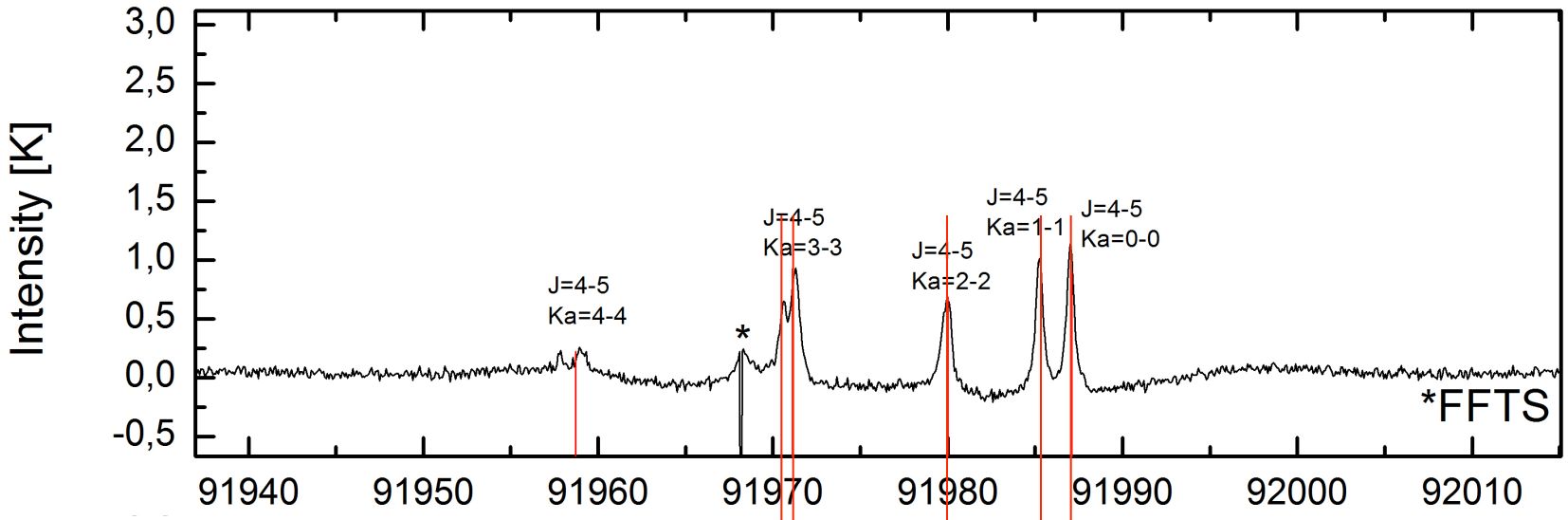
CP Spectrum of Methyl cyanide

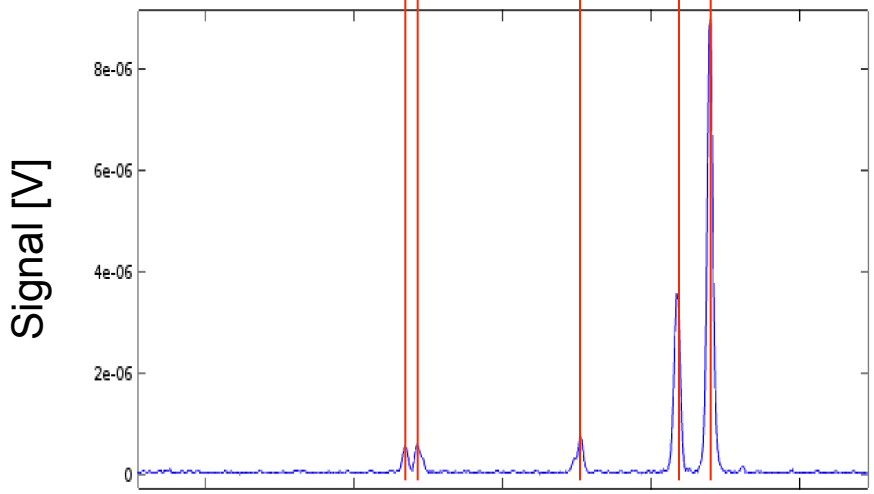




CP Spectrum of Methyl cyanide





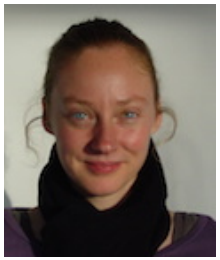


Frequency [MHz]

Team & Acknowledgements

Prof. Dr. Schlemmer

Dr. Endres[1]



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Dr. Lewen

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